Amendments to the Specification

The following paragraph references are directed to the paragraph numbers of the published application, because the paragraph numbers in the filed application and the published application do not match.

Replace para. [0003] of the published application with the following:

The present invention relates generally to the field of logistics and product flow management and more particularly to [[a]] visual control systems that permit routine material transactions.

Replace para. [0005] of the published application with the following:

The modern economy depends on the transfer of products and information between various sites that can be next to each other or on the other side of the globe. For example, modern manufacturing processes may require building one component of a complex device in one country and shipping that finished component to another country where it is integrated into a more complex device. One example is the hard drive industry where a hard drive consists of various components such as a motor, a read/write head and a magnetic recording disk. For economic reasons a company building a hard drive may think it is advantageous ~~advantage~~ to build a read/write head in one country and ship that finished head to another country where it is integrated into a hard drive. In order to make this process efficient, the read/write head manufacturing facility must have a fast reliable flow of product through it as well as the hard drive manufacturing facility that relies on receiving the finished read/write heads on schedule without having to store excess inventory. Reliable

and quick communication within a site and between these sites is important to making the global economy function.

Replace para. [0006] of the published application with the following:

Similarly, the distribution of finished goods has become much more dependent on reliable and quick communication. Many companies are insisting on distribution networks that require manufacturers to warehouse goods and have the goods available on demand. These types of distribution networks are called just-in-time (JIT) Hubs ~~Hub~~. Management of these distribution centers can be problematic because of the conflicting requirements that ~~the~~ each JIT Hub has ~~HUB have~~ enough supply available to meet customer demands but not have too much stock on hand that it takes away inventory from other JIT HUBs also needing the inventory.

Replace para. [0007] of the published application with the following:

Inventory replenishment becomes even a bigger problem when the warehouse and the point of use are not in the line of sight of each other. One reason why the problem is compounded when the warehouse and point of use site are not in each other's line of sight is because of inadequate communications. When two sites cannot communicate efficiently the process slows down and this leads to problems. Another problem is that limited space at point of use site ~~to site~~ can lead to problems because the point of use site may take too long to reorder parts and the warehouse may not react quickly enough when they are not in each other's ~~others~~ line of sight.

Replace para. [0009] of the published application with the following:

Therefore a system and method providing for replenishing low inventory quickly and reliably so that the smooth process flow can occur throughout the entire distribution network is needed. Additionally, a real time demand pull system from the point of use to the point of replenishment to improve the speed and flow of information across the factory to achieve rhythm, flow and balanced of the factory operation is needed.

Replace paragraph [0013] of the published application with the following:

In another embodiment having an environment where the parts are batched and replenished ~~replenish~~ at a predetermined schedule, such as an airplane or truck departure schedule, an acknowledgement that the airplane or truck has been loaded is done by clicking on the screen, changing the color of a portion of the screen to blue, indicating that the parts are prepared on the airplane or truck. When the airplane or truck departs a further acknowledgement is made, typically by clicking on the screen, to indicate that the parts are in transit. The solution maintains the communication link between requestor and sender even in an environment that requires only movement of parts in batches other than continuous.

Replace para. [0014] of the published application with the following:

In another embodiment a method of replenishing parts to a site according to an actual demand of the site, from a warehouse where the warehouse and the site are physically separated ~~and~~ is disclosed. The method includes first collecting inventory data that represents the supply of a part at the site and then uploading the inventory data to a

database. Next, the inventory data is compared to a trigger and a decision is made as to whether the supply of the part at the site requires replenishment. Next the method provides a line of sight communication between the site and the warehouse to synchronize the flow of the part at the demand rate resulting in the site and the warehouse operating as though they are next to one another.

Replace para. [0020] of the published application with the following:

The invention provides a system and method to synchronize the flow of materials based on real demand from critical points of the supply chain to the point of use. This invention has applications in many areas that require a steady supply of materials that must be replenished such as a manufacturing assembly line that requires parts at many operations or a distribution hub that supplies finished goods to customers according to customer demand. For example, one area where this invention is applicable is the hard drive industry where components are manufactured using assembly line processes and are eventually distributed to customers on a customer demand or customer pull basis ~~bases~~.

Replace para. [0022] of the published application with the following:

First internal web client 105 and second internal web client 110 are located inside a company and can represent workstations located at particular sites of a manufacturing facility. For example in a magnetic disk manufacturing facility, first internal web client 105 can be the texturing site which requires a steady stream of incoming substrates and cassettes to hold the substrates as well as other consumables such as slurry used for texturing. Similarly second internal web client 110 can represent workstations located at another

particular site such as the disk-cleaning site. Manufacturing personnel can use first internal web client 105 and second internal web client 110 to enter inventory data ~~into~~ that will be used to determine when it is time to replenish parts. First internal web client 105 and second internal web client 110 use first software application 145 to login and connect to the internal web server 130. First software application 145 can use the hyper-text-transfer-protocol (HTTP) to enable the connection and communication between the web clients and the internal web server 130. Similarly, the internal web server 130 uses second software application 160 to communicate with the external server 155 and database 150. Second software application 160 can use, for example, communication using an Oracle SQL*Net.

Replace para. [0026] with the following:

Next in step 215, the inventory data that has been uploaded to the database is compared with triggers that have been predetermined. The triggers are set so that when the inventory of a particular item drops below the trigger value it is time to replenish the inventory at the specific site. Some factors used to determine the trigger value include the consumption rate, amount of time it takes to order parts and deliver them to the site consuming the parts, and capacity to store parts at the site. One example of data that could be used in a model for determining the trigger value is for parts that are delivered in two hours, the consumption rate is 10 parts per hour, the site can hold 1000 parts, and the minimum number of parts that must be stored is 100. With such data, parts would be sent from the warehouse to the site when the warehouse detects an inventory of parts at the site equal to 120 parts. The amount of parts that would be sent could be as much as 900 parts

because when the parts arrive ~~arrived~~ there should be 100 parts left and room to house 900 more parts. Other models using similar criteria can be used.

Replace para. [0029] of the published application with the following:

In step 230, the warehouse receives a signal notifying and alerting it that a specific site has low inventory of certain parts and that those parts need to be replenished. The warehouse is alerted in such a way that the personnel responsible for identifying and shipping the low inventory parts are [[is]] immediately aware of the low inventory so that a ~~this~~ responsible person can quickly respond. In one embodiment the personnel are alerted through a computer screen ~~that~~ having a color-coded system. When inventory of a particular part is low and replenishment of that part is required, a portion of the screen that is associated with the site and part having low inventory turns red color. The warehouse personnel then see the red color and quickly take action. In other embodiments, the warehouse personnel are alerted through pagers, cell phones or other electronic means. The means chosen to alert the warehouse should be one wherein the warehouse personnel are notified of the replenishment request immediately so that action can be taken immediately. This can be accomplished by various visual or audio techniques.

Replace paragraph [0030] of the published application with the following:

In step 235 a check is made to determine if an acknowledgment has been made that the low inventory parts have been sent to the requester. The alerted warehouse personnel can make the acknowledgement after sending the low inventory parts to the requestor. Next in step 240, a decision is made as to whether the requested low inventory parts have been

sent from the warehouse to the requestor site. Analyzing the check made in step 235 to see if the warehouse personnel have made an acknowledgement assists in making this decision. If the decision reached in step 240 is that the low inventory parts have not been sent to the requestor then personal ~~then personnel~~ at the warehouse continue to be alerted that ~~that~~ inventory is low. If the decision reached in step 240 is that the low inventory parts have been sent to the requestor then the database is updated, in step 245, to indicate that the low inventory parts have been sent.

Replace paragraph [0032] of the published application with the following:

In step 255 a check is made to determine if an acknowledgment has been made that the low inventory parts have arrived at the site requesting the low inventory parts. The original requestor can make the acknowledgement after receiving the low inventory parts that he requested. Next in step 260, a decision is made as to whether the requested low inventory parts arrived at the requestor site. Analyzing the check made in step 255 to see if an acknowledgement was made assists in making this decision. If the decision reached in step 260 is that the low inventory parts <u>are not</u> at the requestor site then the original requester at the requesting site continues to be alerted that that inventory is in transit. If the decision reached in step 260 is that the low inventory parts have arrived at the requestor site then the database is updated, in step 265, to indicate that the low inventory parts arrived.

Replace para. [0033] of the published application with the following:

In step 265, the database is updated to indicate that the low inventory parts arrived at the requesting site. Once the database has been updated to indicate the arrival of the low

inventory parts, the status of the low inventory parts changes to arrived. In this step, all sites are alerted that ~~that~~ the request has been completed. In one embodiment, all sites are alerted through a computer screen having a color-coded system, which is like the system described with reference to step 230. When the low inventory parts arrive at the requesting site and the arrival has been acknowledged, a portion of the screen that is associated with the site and part having low inventory turns green color. All sites can then see the green color and realize that the order for low inventory parts is complete. In other embodiments, the sites can be alerted through various other means including pagers, cell phones or other electronic means that are visual or audio.

Replace para. [0034] of the published application with the following:

FIG. 3 is a high-level process flow diagram of one application that uses the method of replenishing low inventory parts described in the flow chart of FIG. 2. The application illustrated in FIG. 3 is specific to a front end media manufacturing process used to make magnetic media discs used in hard drives and shows information flowing through an internal process 305, then to an external process 310 and finally through the external process 310. The internal process consists of magnetic media disks being tested in the Test Area 315 and then being transferred to the Kitting Area 320. The process starts in the Test Area 315 where the magnetic media disks are tested for performance and reliability. Some of the tests performed can include certification testing and glide testing. Certification testing includes writing a signal to the magnetic media and reading ~~reads~~ it back to test how signals will be recorded on the magnetic media once it is installed in a finished hard drive. Glide testing includes testing for physical defects that could cause a head crash by gliding a

head over the magnetic media disk and looking for defect signals such as thermal asperities. This testing can be 100% testing of all incoming magnetic media disks or it can be sample testing where only a statistical portion of the incoming magnetic media disks are tested. The data for this testing is uploaded to a database that stores the quantity of good magnetic media disks that is ~~are~~ available for shipping to the kitting area 320. When the kitting area 320 is low on magnetic media disks it puts a request in for replenishing its low inventory. The testing area receives this request and ships magnetic media disks that pass the testing criteria to the kitting area 320 in accordance with the process flow of FIG. 2. Although not shown in this diagram, the test area 315 also requests incoming parts from its supplier when its inventory of tested magnetic media disks drops below a predetermined value. This request is also done in accordance with the flow chart of FIG. 2.

Replace para. [0035] of the published application with the following:

The kitting area 320 is where the magnetic media disks are segregated into different cassettes and packaged ~~package~~ for shipping. This process involves separating the magnetic media disks into different cassettes and vacuum sealing the loaded cassettes in an antistatic package wrap. Once the magnetic media disks have been loaded into cassettes and vacuum-sealed, the information is uploaded into a database that stores the amount of magnetic media disks ready for shipping to the next process.

Replace para. [0036] of the published application with the following:

Similarly, parts can flow directly from the clean room 325 to the kitting area 320 or to a degreaser room 330 and then the kitting area 320. In this process the magnetic media

disks go directly from the clean room, where they are sputtered and lubed, directly to the kitting area 320 or to a degreaser, where extra lubricant is removed, and then to the kitting area 320. Either way the data obtained in each process is uploaded to a database as previously described and each area requests replenishment of low inventory parts as previously described and in accordance with the process described with reference to FIG. 2.

Replace para. [0037] of the published application with the following:

From the kitting area 320, magnetic media disks leave the internal process flow 305 and go to the external process flow 310. When Hub 335 or supplier store 340 is ~~are~~ low on inventory they request replenishment and the magnetic media disks are replenished in accordance with the process described with reference to FIG. 2. Similarly, supplier ship 345 receives replenished inventory from supplier store 340 and can replenish the Hub 335 in accordance with the process described with reference to FIG. 2.

Replace para. [0038] of the published application with the following:

FIG. 4 is a flow chart showing details of the flow of signals between different sites for the process described with reference to FIG. 3 above. FIG. 4 illustrates the transfer of signals between the Test area 315, kitting area 320, the non-washed area 415, the washed area 420, the hub 335, the supplier store 340, ~~335~~ and the supplier ship 345. The non-washed area 415 further includes the clean room 325 and the kitting area 320. Similarly, the washed area 420 further includes clean room 325 and degreaser room 330.

Replace para. [0040] of the published application with the following:

The process of handling test ~~Test~~ parts begins by conducting an inventory of the test ~~Test~~ area parts in step 502. These test ~~Test~~ area parts can include printed circuit board assemblies (PCBAs) as well as other parts. Next in step 504 the test area requests test area parts (PCBA). Next in step 506 a decision is made as to whether the test area parts have already been requested. If the decision reached is that the test area parts have been requested then the request from step 504 is ignored in step 508. However, if the decision reached in step 506 is that the test area parts have not been requested then the test area sends a signal in step 510 to the Level One Kitting Area (L1KA) requesting parts and L1KA is alerted with a RED signal. Once L1KA responds by shipping the parts it signals to the testing area with a YELLOW signal. The testing area acknowledges receipt of the parts in step 514 by sending a GREEN signal to the L1KA area and the process ends in step 599. In addition to sending the requested parts, the L1KA area updates ~~update~~ the quantity in L1KA inventory in step 516. Next, a decision is made in step 518 as to whether the L1KA inventory level is below a predetermined critical level. If the inventory in L1KA is not below the critical level the check is ignored in step 518. However, if the decision reached in step 518 is that the inventory level is below the critical level then a request is sent to Level One Store Area (L1ST) in step 522 requesting parts and L1ST and the Hub ~~HUB~~ which will send the parts is alerted with a RED signal. Once the Hub ~~HUB~~ responds by shipping the parts it signals to L1ST with a BLUE signal in step 524. Once the Hub ~~HUB~~ delivers the parts to L1ST, the HUB signals with a YELLOW color, in step 526, to indicate that L1ST has the parts and can forward the parts to L1KA. The parts are then sent to L1KA who acknowledges receipt of the parts, in step 528, by sending a GREEN signal to L1ST. Finally the process ends in step 599.

Replace para. [0041] of the published application with the following:

In step 530 the process handling non-wash ~~Wash~~ parts begins by conducting an inventory of its parts. These non-wash ~~Wash~~ parts can include motors. Next in step 532 a request ~~a request~~ is made to supply non-wash ~~Wash~~ parts (motors ~~Motors~~). Next in step 534 a decision is made as to whether the non-wash ~~Wash~~ parts have already been requested. If the decision reached is that the non-wash ~~Wash~~ parts have been requested then the request from step 532 is ignored in step 536. However, if the decision reached in step 534 is that the non-wash ~~Wash~~ parts have not been requested then the requestor sends a signal in step 540 to the Level Three Kitting Area (L3KA), ~~and L1KA requesting parts~~ and L3KA and L1KA are alerted with a RED signal. Once L1KA responds by shipping the parts it signals to the requestor and Level Three Kitting Room (L3KR) with a YELLOW signal in step 542. In step 544 a decision is made as to whether L3KR has received the shipped non-wash ~~Wash~~ parts. If the decision reached is that the parts have been received then L3KR acknowledges receipt of the parts by sending a GREEN signal is step 550. If the decision reached in step 544 is that the L3KR has ~~does~~ not received ~~receive~~ the non-wash ~~Wash~~ parts, the L3KR responds by sending an ORANGE signal to the requestor in step 548. Subsequently, the requestor acknowledges the ORANGE signal in step 548 and the process ends in step 599.

Replace para. [0042] with the following:

After L3KR acknowledges receiving the non-wash ~~Wash~~ parts in step 550 the process can either end in step 599 or go to step 560 where a [[is]] check is done to determine if the requested non-wash ~~Wash part~~ parts are in queue. Next in step 562 a

decision is made as to whether the requested parts are in queue. If the decision reached is that requested parts are not in queue, then the check [[is]] from step 560 is ignored in step 564. However, if the decision reached in step 562 is that requested parts are in queue, then another decision is made to determine whether the requested part is already at L1KA. If the decision reached in step 566 is that the requested parts are at L1KA, then in step 568 the requested part is stored in queue. However, if the decision reached in step 566 is that the requested parts are not are at L1KA, then in step 570 a RED signal is sent to L3KR and L1KA indicating that the requested parts are not in request to L1KA. The process then continues back to step 542 and goes through the loop again.

Replace para. [0043] of the published application with the following:

In step 580 the process handling wash ~~Wash~~ parts begins by conducting an inventory of its parts. These wash ~~Wash~~ parts can include base ~~BASE~~ parts such as media, heads etc. Next, in step 582 a request is made to supply wash ~~Wash~~ parts (base ~~BASE~~). Next, in step 584 a decision is made as to whether the wash ~~Wash~~ parts have already been requested. If the decision reached is that the wash ~~Wash~~ parts have been requested, then the request from step 584 is ignored in step 586. However, if the decision reached in step 584 is that the wash ~~Wash~~ parts have not been requested, then the requestor sends a signal in step 590 to the DR requesting parts and the DR is alerted with a RED signal. Once DR responds by shipping the parts it signals to the requestor with a YELLOW signal in step 592. The process then shifts to step 566 where another decision is made to determine whether the requested part is already at L1 KA. This leg of the process then continues ~~onto~~ to either step 568 or step 570 and subsequent steps. When the requestor receives the ordered parts, an

acknowledgement which is color-coded GREEN ~~GRERN~~, is sent in step 594. Finally the process ends in step 599.

Replace para. [0044] of the published application with the following:

In FIG. 5 the different levels represent the floors of a building. For example, L1ST represents level 1 store area. L1KA represents level 1 kitting area, which is an area that parts that need to be washed are sent to. L1KR represents level 1 kitting room, which is an area that parts that do not need to be washed are sent. Hub ~~HUB~~ 524 is an external location that could be a supplier of parts.

Replace para. [0045] of the published application with the following:

Another advantage of this application is that a virtual factory can be set up which has the effect of line of sight communication between sites ~~sights~~ that are not actually in each other's line of sight. For example, luggage being transported in an airport can follow this method or an automobile processing plant where different components are made in different parts of the world and all assembled in one location can use this method.

Replace para. [0046] of the published application with the following:

In another embodiment having an environment where the parts are batched and replenished ~~replenish~~ at a predetermined schedule, such as an airplane or truck departure schedule, an acknowledgement that the airplane or truck has been loaded is done by clicking on the screen, and changing the color of a portion of the screen to blue, indicating that the parts are prepared on the airplane or truck. When the airplane or truck departs a

further acknowledgement is made, typically by clicking on the screen, to indicate that the parts are in transit. The solution maintains the communication link between requestor and sender even in an environment that requires only movement of parts in batches other than continuous.

Replace para. [0047] of the published application with the following:

In another embodiment a method of replenishing parts to a site according to an actual demand of the site, from a warehouse where the warehouse and the site are physically separated ~~and~~ is disclosed. The method includes first collecting inventory data that represents the supply of a part at the site and then uploading the inventory data to a database. Next, the inventory data is compared to a trigger and a decision is made as to whether the supply of the part at the site requires replenishment. Next the method provides a line of sight communication between the site and the warehouse to synchronize the flow of the part at the demand rate resulting in the site and the warehouse operating as though they are next to one another.